WHAT IS CLAIMED IS:

1. An anti-neoplastic pharmaceutical composition produced by a process comprising:

a) providing *Vernonia amygdalina* leaves;

b) soaking the leaves in water;

c) next, gently crushing the leaves, in the water, to produce a mixture;

d) filtering the mixture to produce a filtrate; and,

e) collecting the filtrate to produce an anti-neoplastic pharmaceutical composition.

2. The anti-neoplastic pharmaceutical composition of claim 1 produced by a process further comprising subjecting the filtrate to at least one mode of chromatographic separation.

3. The anti-neoplastic pharmaceutical composition of claim 2 wherein the modes(s) of chromatographic separation is/are selected from the group consisting of: preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

4. The anti-neoplastic pharmaceutical composition of claim 2 produced by a process comprising sequential separation of the filtrate by two or more chromatographic modes.

5. The anti-neoplastic pharmaceutical composition of claim 2 produced by a process comprising, in any order, sequential separation of the concentrated filtrate by preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

6. The anti-neoplastic pharmaceutical composition of claim 2 wherein the process comprises:

1) separating the filtrate into fractions by preparative reverse phase high-performance liquid chromatography (PRPC), to produce PRPC

fractions, and identifying the PRPC fraction(s) having greatest potency against cancer cells;

2) separating the PRPC fraction(s), identified in step 1), by Ion exchange Chromatography (IEC) to produce IEC sub-fractions, and identifying the IEC sub-fraction(s) having greatest potency against cancer cells;

3) separating the IEC sub-fraction(s), identified in step 2), by reverse phase chromatography (RPC) to produce RPC sub-fractions;

4) identifying the RPC sub-fraction(s) having the greatest potency against cancer cells; and

5) collecting the RPC sub-fractions identified in step 4) to provide the anti-neoplastic pharmaceutical composition.

7. The product of claim 1 which comprises a peptide having the sequence of SEQ ID NO:1 and/or SEQ ID NO:2.

8. A method of preparing an anti-neoplastic pharmaceutical composition, the method comprising the steps of:

a) providing *Vernonia amygdalina* leaves;
b) soaking the leaves in water;
c) gently crushing the leaves, in the water, to produce a mixture;
d) filtering the mixture to produce a filtrate; and,
e) collecting the filtrate to produce an anti-neoplastic pharmaceutical composition.

9. The method of claim 8 further comprising subjecting the filtrate to at least one mode of chromatographic separation.

10. The method of claim 9 wherein the mode(s) of chromatographic separation is/are selected from the group consisting of: preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

11. The method of claim 9 wherein the filtrate is subjected to two or more modes of chromatographic separation.

12. The method of claim 11 wherein the filtrate is subjected to, in any order, sequential separation by preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

13. The method of claim 9 comprising:

1) separating the filtrate into fractions by preparative reverse phase high-performance liquid chromatography (PRPC), to produce PRPC fractions, and identifying the PRPC fraction(s) having greatest potency against cancer cells;

2) separating the PRPC fraction(s), identified in step 1), by Ion exchange Chromatography (IEC) to produce IEC sub-fractions, and identifying the IEC sub-fraction(s) having greatest potency against cancer cells;

3) separating the IEC sub-fraction(s), identified in step 2), by reverse phase chromatography (RPC) to produce RPC sub-fractions;

4) identifying the RPC sub-fraction(s) having the greatest potency against cancer cells; and

5) collecting the RPC sub-fractions identified in step 4) to prepare the anti-neoplastic pharmaceutical composition.

14. A method of treating an animal afflicted with a neoplastic disease, said method comprising:

administering to the animal, a pharmaceutical composition produced by a process comprising:

a) providing *Vernonia amygdalina* leaves;

b) soaking the leaves in water;

c) next, gently crushing the leaves, in the water, to produce a mixture;

d) filtering the mixture to produce a filtrate; and,

e) collecting the filtrate to produce an anti-neoplastic pharmaceutical composition;

wherein said pharmaceutical composition is administered in an amount effective to slow or stop the progression of the neoplastic disease.

15. The method of claim 14 wherein the pharmaceutical composition is produced by a process further comprising subjecting the filtrate to at least one mode of chromatographic separation.

16. The method of claim 15 wherein the mode(s) of chromatographic separation is/are selected from the group consisting of: preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

17. The method of claim 15 wherein the pharmaceutical composition is produced by a process comprising subjecting the filtrate to separation by two or more chromatographic modes.

18. The method of 15 wherein the pharmaceutical composition is produced by a process comprising, in any order sequential separation of the filtrate by preparative reverse phase high-performance liquid chromatography, ion exchange chromatography, and reverse phase chromatography.

19. The method of claim 15 comprising:

1) separating the filtrate into fractions by preparative reverse phase high-performance liquid chromatography (PRPC), to produce PRPC fractions, and identifying the PRPC fraction(s) having greatest potency against cancer cells;
2) separating the PRPC fraction(s), identified in step 1), by Ion exchange Chromatography (IEC) to produce IEC sub-fractions, and identifying the IEC sub-fraction(s) having greatest potency against cancer cells;
3) separating the IEC sub-fraction(s), identified in step 2), by reverse phase chromatography (RPC) to produce RPC sub-fractions;
4) identifying the RPC sub-fraction(s) having the greatest potency against cancer cells; and
5) collecting the RPC sub-fractions, identified in step 4), to provide the anti-neoplastic pharmaceutical composition.

20. The method of claim 14 wherein the animal is human.

21. The method of claim 20 wherein the neoplastic disease is breast cancer.

22. The method of claim 14 wherein the pharmaceutical composition comprises at least one peptide having the sequence of SEQ ID NO:1 and/or SEQ ID NO:2.

23. A composition comprising a peptide having the sequence of SEQ ID NO:1 and/or SEQ ID NO:2.